
アジア・太平洋経済協力APECプロジェクトInMsideが承認される Project InMside is accepted by the APEC Secretariat

3月に申請し、5月に承認されたAPECプロジェクト(1500万円)が、8月31日、APEC事務局の予算精査を経て昇任されました(900万円)。

このプロジェクトでは、デジタル経済を推進する教育をAPEC域内で実現するための教育課程基準策定域内参照文書を策定します。2019年2月に東京で企画会合、5月にチリで研修、9月にタイでとりまとめ会合を実施します。

詳細に関しては次ページより記載

APEC Concept Note

Please submit through APEC Secretariat Program Director. Concept Notes of more than 3 pages (including title page) or incomplete submissions will not be considered.

Project Title:	Inclusive Mathematics for Sustainability in a Digital Economy (InMside)
Fund Source (Select one):	
<input checked="" type="checkbox"/> General Project Account (GPA) <input type="checkbox"/> Trade and Investment Liberalization and Facilitation Special Account (TILF) <input type="checkbox"/> APEC Support Fund (ASF) – General Fund <input type="checkbox"/> APEC Support Fund (ASF) – Sub-Fund. <u>Please nominate the sub-fund here:</u>	
APEC forum:	Human Resource Development Working Group
Proposing APEC economy:	Japan, Thailand and Chile
Co-sponsoring economies:	Indonesia, Korea, Papua New Guinea, Russia, Chinese Taipei, Malaysia and Viet Nam, China and Canada
Expected start date:	January 1, 2019
Expected completion date:	December 31, 2019
Project summary: Describe the project in under 150 words. Your summary should include the project topic, planned activities, timing and location: <i>(Summary must be no longer than the box provided. Cover sheet must fit on one page)</i>	<i>Digital economy: mathematical decision-making to plan the future economy calls for analysing big data using coding. STEM innovation through mathematical reasoning with ICT is key for sustainable development. Inclusive mathematics recommends appropriate technology for each economy and supports gender equity. The InMside-project aims to develop curriculum developers' capacity under the Action Plan (HRDWG, 2017).</i> a) Steering Meeting in Tokyo (February): to plan InMside Seminar and identify necessary preparatory work. b) InMside Seminar at SOM2 in Chile: Invite all economies' curriculum developers to share the direction of the newest mathematics curriculum reforms and STEAM education for digital economies. It will include keynotes and reports from economies, and plan experimental challenges to produce exemplars for InMside. c) Synthesis Meeting in Thailand (September): InMside will set recommended tasks, strategies and recommendations with reported exemplars,
Total cost of proposal: (APEC funding + self-funding): USD 300,000	Total amount being sought from APEC (USD): 140,000 By category: <i>Travel: 140,000 Labor costs: 0</i> <i>Hosting: 0 Publication & distribution: 0 Others: 0</i> <i>(See Guidebook on APEC Projects, Ch. 9 to ensure all proposed costs are allowable.)</i>

Project Overseer Information and Declaration:

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As Project Overseer and on behalf of the above said Organization, I declare that this submission was prepared in accordance with the **Guidebook on APEC Projects** and any ensuing project will comply with said Guidebook. Failure to do so may result in the BMC denying or revoking funding and/or project approval. I understand that any funds approved are granted on the basis of the information in the document's budget table, in the case of any inconsistencies within the document.


 126/02/2018

Name of Project Overseer / Date

Project Synopsis

1. **Relevance – Benefits to region: What problem does the project seek to address? Does it have sustained benefits for more than one economy?**

For the APEC mission “to support *sustainable economic growth and prosperity*” in education and for the Action Plan of the APEC Education Strategy for 2030 in HRDWG (2017), curriculum reforms are a key for the long-term development of human capital and ensuring their mobility. However, government curriculum specialists who enact the reforms are not always familiar with the most current innovation issues. Aspects of curriculum are often maintained even when they have lost relevance. Thus, curriculum developers are necessary to ensure high-quality curriculum development.

For the capacity development of curriculum developers, InMside will organize seminars and produce recommendations and exemplars for the following three issues. First, providing and extending learning opportunities for the *Digital Economy*. For the development of *Science, Technology, Engineering, and Mathematics (STEM)* curriculum (APEC Educational Ministers Statements, 2016), InMside provides learning opportunities to APEC officials lacking knowledge of mathematics with ICT for the innovation of business under the newly established mathematical sciences. In this Digital Era, mathematics is used especially for handling big data, coding for innovation through STEM, and decision-making with the support of Artificial Intelligence. Technology in mathematics provides necessary tools for mathematical exploration, representation and modelling environmental, natural and social phenomena. Social and economic engineering based on mathematical models with coding is the newest key for the digital economy. The InMside Seminar will be the key opportunity for government specialists (curriculum developers) to learn these latest developments from industry and academia, and will provide an avenue to produce simple exemplars for school education, such as utilizing e-learning resources with the collaboration of industry and academia. **Second, developing high quality inclusive mathematics curriculum for the Digital Economy.** In education, there are various obstacles that must be overcome to achieve a digital economy. For example, the lower mathematics achievement of girls and some minority groups erects barriers to pursuing higher income careers. In the economies which have power blackout problems, appropriate technologies such as printed textbooks are selected instead of e-content. However, beyond such diversities, the unified digital format of e-contents for the sharable models in APEC economies are recommended as for accessible in remote areas. The sharable exemplars relating to inclusion problems can be developed as narratives that can become well-known the more they are used in the classroom and repeated beyond. This addresses the diverse meaning of inclusion as identified in Papua New Guinea 2018 under the theme title “Harnessing Inclusive Opportunities, Embracing the Digital Future”. Accordingly, STEM education in InMside is interpreted as STEAM Education: here, the “A” means “A”rts, “A”ppplied mathematics using ICT and “A”ppropriate Technology. For example, using mathematics for the industrialization of arts and design under their culture through appropriate technologies provides exemplars for all economies. **Third, sustainability develops recommendations and produces exemplars.** InMside 2019 supports working together to share tasks, strategies and recommendations for producing exemplars for new content based on the seminar in Chile.

Relevance – Eligibility: How does the project fit the eligibility criteria and funding priorities for the nominated fund or sub-fund? (see <http://www.apec.org/Projects/Funding-Sources.aspx> for eligibility criteria)

For the GPA funding priorities for 2018, InMside seeks the human capital development necessary for ensuring curriculum promoting Inclusive Mathematics for Sustainability in a Digital Economy, which directly corresponds to “Promoting Sustainable, Innovative and Inclusive Growth”, “Improving Connectivity”, and “Innovation in the Digital Age”, and treats exemplars for “Enhancing Food Security and Sustainable Agriculture in Response to Climate Change”, and “Strengthening Inclusive Growth Through Structural Reform” for its curriculum content. InMside uses the products of other fora for producing exemplars of e-content in STEM education.

Relevance – Capacity Building: How will the project build the capacity of APEC member economies? For ASF projects, please identify the APEC developing member economies that will benefit from this project. (Refer to capacity building goals, objectives and principles at Appendix K of the Guidebook.)

InMside invites curriculum specialists from all economies and builds their capacity focusing on mathematics and STEM education for a Digital Economy through the development of necessary recommendations for e-content. Through these contributions, they engage in innovative curriculum exemplars. InMside also provides curriculum reform in accordance with their economies’ development status and cultural particularities.

2. **Objectives: Describe the 2-3 key objectives of the project. (e.g. ensure workshop participants will be able to...; to create a framework...; to develop recommendations...; to build support...; to revise strategies...; to create an action plan;...to increase knowledge in; to build capacity in... etc.)**

- 1) InMside in 2019 aims to create a set of recommendations for curriculum reform relating to the *Digital Economy* in relation to STEM with ICT and *Inclusive Mathematics (STEAM)*
- 2) The InMside Seminar for curriculum reform at SOM2 in Chile will invite government officials from every economy, share what InMside is, and increase knowledge for curriculum reform in the Digital Era together with keynotes, reports on the current work of participants, with corroboration of other fora. The Seminar will build their capacities to produce exemplars on InMside with possible Appropriate Technology at their developmental stages, and elaborate tasks, strategies and recommendations to produce exemplars for realizing high-quality curriculum.

3. **Alignment – APEC: Describe specific APEC priorities, goals, strategies and/ or statements that the project supports, and explain how the project will contribute to their achievement.**

The projects center on human capital development, especially professional development for curriculum developers, through knowledge gained from the InMside seminar and the development of exemplars for InMside, aims that are supported by the APEC Educational Ministers' statements in Peru (2016), the Promoting Sustainable, Innovative and Inclusive Growth (APEC 2017) and Harnessing Inclusive Opportunities, Embracing the Digital Future (APEC 2018). InMside addresses both STEM education for the Digital Era and inclusive sustainable development.

Alignment – Forum: How does the project align with your forum's work plan/ strategic plan?

The Action Plan for APEC Educational Strategy on HRDWG (2017) emphasizes the development of competencies in accordance with the needs of individuals, societies and economies by taking a collaborative and strategic approach, and encouraging policy discussions and the sharing of good practices using data and the targets for 2030 on 3.1 Enhancing competencies (quality assurance frameworks as applicable for each economy); 3.2 Accelerate Innovation, Target 1) the use of educational and technological capabilities in teaching and learning processes, Target 2) Integrated Science, Technology and Innovation in Education and Pedagogical Practices, and Target 3) Increased government-industry-academia collaboration for R & D and innovation; 4.3 Increase Employability, Action 1) the Promotion of Collaboration between Government, Higher Education and TVET Institutions, Business and Education and Training Stakeholders, Action 2) Development of 21st Century Competencies for Work and Entrepreneurship, and Action 3) Smoothing the Transition from Education to Work. For those, the InMside enhances the capacity of curriculum developers and develop exemplars through collaboration.

- **Methodology: How do you plan to implement the project? Briefly address the following:**

- **Work plan: Project timelines, dates of key activities and deliverable outputs.**

a) Steering Meeting in Tokyo: Plan the InMside Seminar at SOM2 in Chile. This output will be the plan for preparing for (b).

b) InMside Seminar for Reform of Mathematics Curriculum and STEAM Education at SOM2 in Chile: Invite curriculum specialists from every economy, circulate reports on their situation/progress, and, through keynotes addresses from industry and academia, share the newest developments of the Digital Economy such as analyzing big data, coding and decision-making, supporting innovative STEAM education using mathematical reasoning with ICT, selecting appropriate technologies for low developing economies, and responding to gender issues. The Seminar will also plan the experimental challenges that will produce the exemplars with collaboration of other fora as a product of (c).

c) Synthesis Meeting in Thailand (September): InMside sets tasks, strategies and recommendations with reported exemplars to develop innovative curriculum.

- **Beneficiaries: Selection criteria for participants, beneficiary profiles (e.g. participants, end users, policy makers, researchers/ analysts, gender) and how they will be engaged.**

Direct beneficiaries are curriculum developers of each economy. Indirect beneficiaries are students who will learn under the advanced and enhanced curricula in the future.

- **Evaluation: Indicators developed to measure progress, project outcomes and impacts/ successes. Where possible provide indicators which could assess impacts on women.**

InMside Seminar for Curriculum Reform at SOM2 in Chile: numbers of participating economies and reports. The final product will be the collection of tasks, strategies and recommendations for curriculum development and implementation.

- **Linkages: Information on other APEC and non-APEC stakeholders and how they will be engaged. If and how this proposal builds on (but does not duplicate) the work of other projects. How will this activity promote cross fora collaboration?**

Learning and extending the experience of the past projects and collaborations: The past HRDWG achievements in USA, Japan, Taiwan, Korea, Thailand and Chile in relation to STEM and gender education will be showcased in the InMside. The past 12 years of APEC Lesson Study (LS) in HRDWG by Japan and Thailand provides the experimental study basis for InMside. It includes the Energy (2016-2017) project used the Energy Working Group database which established the collaboration with other fora. It also includes the curriculum development for Emergency Preparedness which influenced UNESCO through providing several exemplars for the UNESCO guidelines of the textbook-development for SDGs by Mahatma Gandhi Institute of Education. It also supported all ASEAN countries to produce exemplar for LS. Under those experiences of HRDWG and other fora, and collaboration with UNESCO and ASEAN, the InMside steering meeting in Tokyo plans the collaboration with cross-fora and past achievements at the subsequent seminar and meeting.